

such gentle though active stimulus. Such an exhibition affords at one view a variety of examples of structures, many of them similar in purpose, and is thus calculated to achieve the important end of establishing in each mind, more or less, the principle of a decided preference. Each beholder distinctly feels and exerts the power of liking one design better than another, and derives pleasure from the exercise of that power; thus realizing a capital or stock in hand of critical taste, that goes far to induce him to avail himself of the opportunities that afterwards continually lie open to him for improving it.

This we conceive to be the *modus operandi* on an uneducated mind: to the artistically educated man such a collection needs little to recommend it. It is to him a luxurious studio, where he finds the materials for increasing his previously acquired store of knowledge, and for perfecting his taste in all its varied details. Again, from the facilities it affords he can clearly mark the advancement of men of established talent,—he can search out and perhaps form the idea of encouraging genius hitherto unrecognised,—and he can rejoice in the progress of the art he loves in districts remote from his own sphere of action, and in the minds of individuals to whom his personal influence can never be extended. A collection of this kind also enables the foreigner of taste, who visits our shores, to take at once a clear and comprehensive view of the general state of architecture throughout the kingdom. By well-known and eminent architects it ought to be supported with spirit and vigour, affording, as it does, an important means for increasing their fame, and an arena in which they can incontestably prove, by comparison, the justness of their claims to the honourable position they occupy. To the local and junior professors of the art it is invaluable; for through such means alone can they hope to introduce themselves to the notice of the general public, and by shewing what they have done, and can do, establish their claims to attention on a fair and proper basis. These are some of the advantages that a national exhibition is calculated to confer upon the public and the professor.

Of the other heads of the inquiry we shall speak hereafter.

FALSE PUBLIC DOCUMENTS.

WEEK after week and month after month, for some years past, we have been looking for the alteration of the written lists of regulations put up at the several entrances to the parks, which are practical untruths. They are signed, "By command of His Majesty, Augustus Frederick, ranger," and give the same unpleasant impression which is produced when you observe that the almanac of the previous year has not been changed in a solicitor's office,—a sure sign that things are going badly, and that time is of little consequence there.

These rules are the current regulations of the day, and have their authority from her Majesty (God bless her!) and the present ranger. Do, pray, therefore, excellent Lord Morpeth, let the office of Woods' painter set matters straight, and give a business-like and truthful appearance to these boards, which at present lie as they stand (so very unlike some other Boards), and you will thus remove an eyesore and a reproach, and oblige many besides your lordship's admirer.

"THE BUILDER."

KENSINGTON.—Sir: You have recently spoken of Kensington,—do, pray, remark again on the want of a proper gate-entrance to the Queen's-road, similar to the one at Bayswater, and tell them to pull down that rookery called Jennings's-buildings, and form a nice street through it, with private houses on both sides of the way; and where the "Crown" public-house was burnt down, to pull the remainder of the houses down as far as the National School, with the houses opposite, in order to widen the road at that part, and to throw the houses back. As for the new church they intend to build down Victoria-road, although Mr. Vallotton has given them the site for it, they seem to sleep over it.

A CONSTANT READER.

ON GUTTERS, FLATS, AND LEAD WORK.

PROFESSOR DONALDSON'S LECTURES AT THE LONDON UNIVERSITY.

IN connection with our remarks on the importance of the study of construction, the inattention to it displayed in too many cases, and our suggestion of such aids as would render the acquirement of professional knowledge a matter of less difficulty than it now is, it would be wrong were we to omit reference to the eminent labours in this respect of Professor Hosking at King's College, and Professor Donaldson at the London University, and not urge on our younger readers the advantage which many of them would derive, at comparatively small cost, from joining the classes of one of them. Confining ourselves on the present occasion to the labours of the latter gentleman, we may state that he gives every year from 100 to 120 lectures, partly on architecture as an art, partly as a constructive science. In illustration of the first, beyond a large collection of diagrams and drawings, the pupils are taken to the buildings of chief importance in the metropolis, where their merits of design and execution are pointed out; and the course on construction is elucidated by practical experiments. To convey a better idea of the sort of information which is conveyed, we give notes of the professor's last lecture, which related to gutters, flats, and lead work.

Gutters.—After speaking of eaves-gutters, Mr. Donaldson said,—To obviate their defects, trough or parallel gutters are constructed, and they are formed by letting the feet of the common rafters fall on a deepish pole-plate, which forms one side of the gutter, whence the name parallel gutters. The gutters, if next a lofty parapet, should be at least 15 inches wide, but if between two sloping roofs of moderate size, 12 inches will suffice. The fall and drips may be less than in the former gutters, but it is as well to get the fall as rapid as possible, and the drips as deep as circumstances will allow.

At the lowest part of the gutters a cistern must be formed the full width of the gutter, about 18 inches or 2 feet long, and 8 or 10 inches deep, at the bottom of which should be a pipe some 4 or 6 inches in diameter, as the case may require, which pipe either goes directly into the main stack of rain-water pipes, if immediately under; or else leads the water into the cistern head at the top of the stack of rain-water pipes outside the building. It is to be observed that it is necessary to prevent the obstructions of the top of these pipes, by leaves or other substances. For this purpose there is placed over the pipes a loose lead circular cauliflower head, perforated with numerous holes, about half an inch diameter, the head itself some 9 or 12 inches in diameter; or else there is a grating at the top of the cistern, which however is likely to be choked. In fact, the great object must be to get the gutters to relieve themselves of the water as soon as possible, that it may not overflow at the drips or joints, or by rising over the lead where turned up. Another good expedient is to have metal or wood gratings all through the gutters, strong enough to bear a man's weight.

This prevents the obstruction of gutters, by the snow sliding off in large masses from the roof, and protects the lead from injury by nails in the shoes or boots of those sent to repair or cleanse the gutters. If shovels be used in the gutters, or on the flats, they should be of wood. The heads at the top of the rain-water pipes should be of metal, either lead or iron, sufficiently capacious, and provided with waste shoots about 1 or 2 inches in diameter; so that, in case of the head becoming choked, the water may flow off through these shoots.

We find in the Gothic buildings, that the stacks of rain-water piping were of lead, sometimes of stone, and that the cornices and strings frequently profiled round them. Often there were no stacks of pipe, but the waters were discharged directly from the gutters, by greatly projecting stone tubes, called gurgioles, covered with odd capricious figures of animals and birds, nay sometimes of men. They threw the water off to a great distance, but in case of a driving rain, were very unavailing to protect the wall on the windward side of a building, as the force of the wind would blow it on the walls, and completely saturate them. Care should be taken to have the stacks of pipes

as straight as possible, without any bends, or if there must be some angles, they should be rendered as obtuse and gradual as possible. At the bottom of the stack there should always be a shoe to break the force of the descending water, and turn the current into the mouth of the drain into which it is discharged. All the joints must be made as secure as possible, and to prevent overflow or dripping, they should be stopped with oakum, well driven in. It is evident that in channels for water, there should be as few angles as possible, either in the section of the channel itself, or in the line or direction which it follows. Now, it is very frequently necessary to lead a gutter from one point to another; in this case, it is as well to construct the angle with a circular turn: this less impedes the currents of water, prevents the accumulations of leaves, dirt, and other matters, and leaves the watercourse unobstructed.

Lead Flats.—As regards lead flats, they should always be formed with well-seasoned timber, as their position renders them most liable to the heating action of the sun, which is very trying to unseasoned timber. They should be laid with a sharpish fall, not less than 3 in. in 10 ft.; the rafters or joists should be laid transversely, and the boarding in the direction of the fall, as otherwise, in case of shrinkage and twisting, the rising edges of the boards would form so many ledges to prevent the water running off, and nothing is more detrimental or trying to lead than settlements of water, which, evaporating, tend to decompose the lead. It is better for lead to be always free or always covered with water, than alternately either one or the other. The boards should be of equal thickness, and the edges shot, to prevent open or irregular joints.

Lead.—The best lead is the purest, free from all foreign matters. It is manufactured for use in two ways, either milled or cast. In the first case it is passed through a mill in two cylinders, which secures its being of equal thickness, or it is molten and cast in sand, from which inequality of the thickness sometimes comes, and sand-flaws will be produced, which, however, can be detected by careful examination. None but the best lead can be cast, but an inferior and mixed quality can easily be passed through the mill. Hence each sort has its advocates. The even thickness and the smoother surface, which offers less friction to the water, outweighing every other consideration with some, and others preferring the cast, on the ground of the purer quality thereby ensured. But although cast lead may be safely used for parts where great weight is required, as in gutters and cisterns, in which cases a slight inequality of substance is not so material, yet in parts where lighter lead is used, as of 5 lbs. or under, in flashings, hips, and ridges, then the milled lead must be employed, in order to ensure that no parts be under the standard thickness. In buildings of the very first class, the flats should be of 9 lbs. lead, the gutters 8 lbs., the hips and ridges 6 lbs., the flashings 4 or 5 lbs. In all other buildings they should not properly be more than 1 lb. less.

The sun acts so powerfully in expanding, and the cold in contracting lead, that it is of the utmost importance to lay the sheets as loose as possible, in order to afford them play, or they will crack, and no other fastenings must be used than those absolutely required to keep the lead in its place. Except in cisterns, it should never be soldered. The sheets should not exceed 3 feet in width, nor be in greater lengths than 16 ft. Consequently, as the sheets supplied by the lead merchant are about 6 ft. wide and 16 ft. or 17 ft. long, they may be cut in half.

On leaded roofs or flats, the side joints are formed by laying wooden rolls about 1 in. or 1½ in. diameter, round which the sheets are turned at the side one over the other; and this is usually sufficient to prevent the wet from rising over the roll and under the lead; when the inclination is very rapid, lead-headed nails are driven through the lead into the roll to secure the sheets, and then the lead is soldered over to prevent the wet entering, but they soon get loose. In old roofs the junction is formed by merely turning up the edges one over the other, without a roll, and hammering them together.

It is to be observed that the weight of the lead must be somewhat regulated by the greater or less exposure of the roof; for if in